

REMARKS/ARGUMENTS

**General Remarks**

Claims 4-6 are currently amended. Claims 7-10 are added. Claim 4 has been amended to change both “containing” and “comprising” to “consisting of”. The amendment to Claim 5 finds support in the specification: pg 5, Table 1, “Mn” column. Claim 6 was amended to remove the informality and finds support in the specification: pg 2, [0005] and pg 3, [0012]. Claim 7 finds support in the original claims and specification: see, e.g., Table 1. Claim 8 finds support in the specification: pg 2, [0005] and [0006], and pg 4, [0015]. Claim 9 finds support in the specification: pg 2, [0005], [0006], and [0007], and pg 4, [0015]. New Claim 10 is supported by Claim 5, differing in the amount of Mn present. Support is found at specification pg 5, Table 1, “Mn” column, Example 16. No new matter has been entered.

**Claim Objections**

Claim 6 has been amended to remove the informality. Therefore, Applicants respectfully request withdrawal of the objection to claim 6.

**Claim Rejections - 35 USC § 103**

Claims 4-6 are rejected as obvious over JP 2000-204428A (JP’428). Applicants submit that JP’428 does not render obvious the present claims. The Office has asserted that JP’428 teaches a die cast aluminum alloy “comprising (in wt %): 11-16% Si, 0.5-0.2% Mg, 3-7% Cu, 3-7% Ni, 0.2-1.5% Fe, 0.2-1.0% Mn, 0.003-0.015% P” (Office Action, pg 2, 4<sup>th</sup> para). However, Claims 4 and 6 each require that the total amount of iron and manganese is 3.0% by mass or greater. JP ‘428 suggests, at best, 2.5% Fe+Mn. Thus, Claims 4 and 6 are neither disclosed nor suggested by the reference. In addition, Table 1 at specification page 5 shows that a generally lower Young’s modulus is obtained when Fe+Mn < 3%, as claimed. Thus, the rejection of Claims 4 and 6 over JP’428 should be withdrawn.

Regarding Claim 5 and new Claim 7, each of the aluminum alloys described in these claims requires 1-3% by mass of manganese.<sup>1</sup> While JP'428 broadly suggests 0.2-1.0% Mn, the Examples therein use only 0.35% Mn. Moreover, and as shown herein in Table 1:

[Table 1]

No.		Composition (wt%)													Characteristics	
		Si	Cu	Ni	Fe	Mn	Mg	Cr	Ti	B	V	Zr	Mo	P	E (GPa)	$\alpha$ ( $\times 10^4/^{\circ}\text{C}$ )
1	Compositions According to the Present Invention	13	5	3	2	1	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.01	96	17.8
2		24	5	3	2	1	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.01	103	14.6
3		16	3	3	2	1	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.01	96	17.2
4		16	7	3	2	1	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.01	100	16.7
5		16	5	1	1	1	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.01	93	17.5
6		16	5	3	2	2	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.01	98	17.0
7		16	5	6	2	3.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.01	106	16.4
8		16	5	1	1	1	1.5	1.0	1.0	1.0	1.0	1.0	1.0	0.01	98	16.9
9		16	5	--	2	2	--	0.4	--	--	--	--	--	0.01	92	17.8
10		16	5	--	2	2	0.5	0.4	--	--	--	--	--	0.01	92	17.8
11		16	5	--	2	2	--	0.4	--	0.4	--	--	--	0.01	94	17.7
12		16	5	--	2	2	--	0.4	0.4	--	--	--	--	0.01	93	17.7
13		16	5	--	2	2	--	0.4	--	--	0.4	--	--	0.01	93	17.7
14		16	5	--	2	2	--	0.4	--	--	--	0.4	--	0.01	94	17.7
15		16	5	--	2	2	--	0.4	--	--	--	--	0.4	0.01	94	17.7
16		14	4	2	2.5	1.2	--	0.5	0.5	--	0.5	--	--	0.01	94	17.6
17		16	5	--	2	2	0.5	--	--	--	--	--	--	0.01	90	17.9
18	Comparative Examples	12	1	1	1	0.5	1	--	--	--	--	--	--	--	80	20.0
19		11	2.5	--	0.8	0.2	0.2	--	--	--	--	--	--	--	78	21.0
20		16	5	0.5	1	0.5	0.5	0.4	--	--	--	--	--	0.01	87	17.9
21		16	5	2	--	2	--	0.4	--	--	--	--	--	0.01	91	17.8
22		16	5	2	2	--	--	0.4	--	--	--	--	--	0.01	--	17.4
23		16	1	--	2	2	--	0.4	--	--	--	--	--	0.01	86	18.5
24		12	5	--	2	2	--	0.4	--	--	--	--	--	0.01	88	18.9

excellent rigidity is obtained when the claimed higher amount of Mn is present. See, especially, comparative alloys 18-20, all of which use an amount of Mn in JP'428's lower suggested range, all showing Young's modulus values of only 80-87. Compare this with

<sup>1</sup> New Claim 10 requires 1.2 - 3% by mass of manganese.

alloys according to the pending claims as exemplified in the compositions according to the invention, all having significantly higher Young's modulus values.

In JP'428, Mn is added in order to suppress the formation of coarse needle-like Al-Fe crystals, and to increase high temperature strength (JP'428 [0012]), and nothing in this reference suggests the higher levels as claimed herein, or the benefits of increased rigidity as shown above. As such, the rejection of Claim 5 over JP'428 should be withdrawn, and this rejection should not be applied to new Claims 7 and 10.

Finally, new Claims 8 and 9 require, among other limitations, 0.1-1.0% by mass of chromium. JP'428, on the other hand, uses only 0.08% by weight Cr in the Examples. As nothing suggests the alloys described in Claims 8 and 9 nor the benefits provided by the unique combination of elements and their relative amounts (See, e.g., Table 1 above) Applicants respectfully submit that these claims are patentable over the disclosure in JP'428.

For the reasons discussed above, Applicants submit that all now-pending claims are in condition for allowance. Applicants respectfully request the withdrawal of the objection, and withdrawal of the rejections, and passage of this case to Issue.

Respectfully submitted,

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